

IN THE CLAIMS:

1. (Currently Amended) A system for delivering a supply of gases to a patient comprising:
 - a gases supply providing a flow of gases,
 - a humidifier receiving said flow of gases from said gases supply and capable of humidifying said flow of gases up to a level of humidity prior to delivery to said patient,
 - a conduit conveying said flow of gases from said humidifier to said patient,
 - a sensing device to sense the humidity, temperature or flow rate of said flow of gases after said flow of gases have been humidified by said humidifier, said sensing device comprising:
 - a cartridge or open tubular section having a port,
 - a sensor,
 - a housing ~~releasably~~ removably containing said sensor, ~~in use said housing being sealably connected to the port,~~
 - a filter attached to said housing, and

wherein the cartridge or open tubular section is ~~releasably~~ removably coupled, in use, in line between said humidifier and said conduit, the housing being removably coupled to said port of said cartridge or open tubular section, in use said housing being sealably connected to the port such that said sensor is exposed to said flow of gases through said cartridge or open tubular section, and the filter being located such that said sensor is exposed to a portion of said flow of gases passing through said filter only, with a significant portion of the flow of gases passing from the humidifier to the conduit without passing through the filter material,

the filter and housing preventing contamination passing from the flow of gases to the sensor, the sensor being removable from the housing for subsequent reuse, the functionality of said sensor being intact after removal from the housing.

2-16. (Cancelled)

17. (Previously Presented) A system according to claim 1 wherein said humidifier includes a humidification chamber adapted to receive a volume of water and a water heater to heat said water, said flow of gases passing through said humidification chamber, through a gases inlet and out a gases outlet, and evaporating said water, said flow of gases thereby being humidified.

18-25. (Cancelled)

26. (Previously Presented) A system according to claim 17 wherein said humidifier includes a controller to control said water heater and the level of humidity or temperature of said flow of gases.

27. (Previously Presented) A system according to claim 26 wherein said sensor is connected to said controller and conveys a sensed level of humidification of said flow of gases to said controller, said controller controlling said water heater to alter said sensed level of humidification of said flow of gases to a predetermined humidification level.

28. (Previously Presented) A system according to claim 27 wherein said predetermined humidification level is such that said patient receives said flow of gases at 37°C and containing 44mg of water vapour per litre.

29. (Previously Presented) A system according to claim 17 wherein in use, connections are formed between one side of said cartridge or open tubular section and said outlet of said humidifier and the other side of said cartridge or open tubular section and said conduit.

30. (Previously Presented) A system according to claim 29, wherein said connections are one of a friction fitting, bayonet fitting, snap fitting or threadable connection.

31. (Currently Amended) A sensing device to sense humidity, temperature or flow rate of a flow of gases in a conduit after said flow of gases have been humidified by a humidifier and providing feedback to a controller which controls said humidifier, said sensing device comprising:

a cartridge or open tubular section having a port,

a sensor,

a housing ~~releasably~~ removably containing said sensor, ~~in use said housing being sealably connected to the port,~~ and

a filter attached to said housing, and

wherein said cartridge or open tubular section is ~~releasably~~ removably coupled, in use, in line between the humidifier and the conduit, the housing being removably coupled to said port of

said cartridge or open tubular section, in use said housing being sealably connected to the port
such that said sensor is exposed to said flow of gases through said cartridge or open tubular
section,

said filter being located such that the sensor is exposed to a portion of the flow of gases
passing through the filter only, with a significant portion of the flow of gases passing from the
humidifier to the conduit without passing through the filter,

the filter and housing preventing contamination passing from the flow of gases to the
sensor, the sensor being removable from the housing for subsequent reuse, the functionality of
said sensor being intact after removal from the housing.

32. (Previously Presented) A sensing device according to claim 31 wherein said housing
extends through or resides within said cartridge or open tubular section and at least part of said
filter is exposed to said flow of gases.

33. (Previously Presented) A sensing device according to claim 31 wherein said filter is a
semi-permeable or hydrophilic material.

34. (Previously Presented) A sensing device according to claim 31 wherein said filter is
monolithic film, microporous media or electrostatic filter.

35. (Previously Presented) A sensing device according to claim 31 further including a heater
to provide heat to said sensor.

36. (Previously Presented) A sensing device according to claim 35, wherein said sensor heater is contained in said housing.

37-41. (Cancelled)

42. (Previously Presented) A system according to claim 1, wherein said housing extends through or resides within said cartridge or open tubular section and at least part of said filter is exposed to said flow of gases.

43-45. (Cancelled)

46. (Previously Presented) A system according to claim 1, wherein said filter is a semi-permeable or hydrophilic material.

47. (Previously Presented) A system according to claim 1, wherein said filter is monolithic film, microporous media or electrostatic filter.

48. (Previously Presented) A system according to claim 1, further including a sensor heater to provide heat to said sensor.

49. (Previously Presented) A system according to claim 48, wherein said sensor heater is contained within said housing.

50. (Previously Presented) A sensing device according to claim 31, wherein in use, connections are formed between one side of said cartridge or open tubular section and an outlet of said humidifier and the other side of said cartridge or open tubular section and said conduit.

51. (Previously Presented) A sensing device according to claim 50, wherein said connections are one of a friction fitting, bayonet fitting, snap fitting or threadable connection.